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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,101	09/30/2003	Matthew D. Felder	SIG000092	4811
34399	7590	04/04/2005	EXAMINER	
GARLICK HARRISON & MARKISON LLP			GRANT, ROBERT J	
P.O. BOX 160727			ART UNIT	
AUSTIN, TX 78716-0727			PAPER NUMBER	

2838

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EV

Office Action Summary	Application No.	Applicant(s)	
	10/675,101	FELDER, MATTHEW D.	
	Examiner	Art Unit	
	Robert Grant	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-16 is/are allowed.
- 6) ☒ Claim(s) 1-7, 17, 20 and 21 is/are rejected.
- 7) ☒ Claim(s) 1, 6, 8, 9, 18 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 1, 6, are objected to because of the following informalities: Line 6 of claim 1, after the word components, the word "to" should be replaced with "do". Line 6 of claim 6, after the word components, the word "to" should be replaced with "do".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 6, 17, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. (US 6,614,206) in view of Notaro et al. (US 5,781,390).

As to Claim 1, Wong discloses an apparatus for charging a battery from an external power source (Figure 11). Wong does not expressly disclose a protection circuit to provide overvoltage protection and backflow current protection and a switching circuit to switch between modes. Notaro discloses a protection circuit to provide overvoltage protection and backflow current protection (Figure 1), in which source voltage of the

external power source exceeds nominal value of a rail voltage supplied by the battery, the protection circuit to accept the source voltage, but to ensure that node-to-node potential on circuit components to not exceed a specified value when the external power source is used to charge the battery (Column 4, lines 10-27) and to prevent backflow current from the battery to the external power source when voltage of the external power source drops below voltage of the battery (Column 3, lines 51-57); and a switching circuit to switch a mode of operation of the protection circuit between the overvoltage protection and the backflow current protection (Column 3, lines 51-57) (No voltage is flowing through the circuit and therefore the overvoltage protection is switched on and off depending on backflow switching condition). Therefore it would have been obvious to a person having ordinary skill in the art at the time of this invention to add Notaro's protective circuit to Wong's charger in order to protect both the battery and the charging circuitry.

As to Claim 2, which is dependent upon claim 1, Wong in view of Notaro further disclose wherein the switching circuit switches the mode of operation of the protection circuit by changing a bias applied to the protection circuit (Notaro Column 3, lines 51-57).

As to Claim 6. Wong discloses an apparatus for receiving external voltage through a data transfer link and used to charge a battery (Figure 11). Wong does not expressly disclose the apparatus comprising: a protection circuit to provide overvoltage protection

and backflow current protection and a bias and switching circuit. Notaro discloses a protection circuit to provide overvoltage protection and backflow current protection (Figure 1), in which the external voltage exceeds nominal value of a rail voltage supplied by the battery, the protection circuit to accept the external voltage, but to ensure that node-to-node potential on circuit components to not exceed a specified value when the external voltage is used to charge the battery (Column 4, lines 10-27) and to prevent backflow current from the battery to the data transfer link when the external voltage drops below battery voltage (Column 3, lines 51-57); a biasing circuit to bias the protection circuit (Figure 1, element 140); and a switching circuit to change the bias applied by the biasing circuit to selectively switch a mode of operation of the protection circuit between the overvoltage protection and the backflow current protection (Column 3, lines 51-57) (No voltage is flowing through the circuit and therefore the overvoltage protection is switched on and off depending on backflow switching condition). Therefore it would have been obvious to a person having ordinary skill in the art at the time of this invention to add Notaro's protective circuit to Wong's charger in order to protect both the battery and the charging circuitry.

As to claim 17, Wong discloses a method of linking an external voltage to charge a battery. Wong does not expressly disclose providing overvoltage protection and back flow current protection comprising and a switch circuit for switching between the modes. Notaro disclose providing overvoltage protection and back flow current protection comprising: power circuitry of an integrated circuit powered by the battery

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(Figure 1); providing a first biasing to a protection circuit to prevent excessive external voltage from being applied to the circuitry, when the external voltage is linked to the integrated circuit (Elements 145, 160, 165); providing a second biasing to the protection circuit to prevent backflow current flow from the battery to external source of the external voltage, when the external voltage drops to a specified voltage below that of the battery (Elements 140, 150, 155); switching between overvoltage protection and backflow current protection modes of operation by switching in the first or second biasing based on a value of the external voltage (Column 3, lines 51-57) (No voltage is flowing through the circuit and therefore the overvoltage protection is switched on and off depending on backflow switching condition). Therefore it would have been obvious to a person having ordinary skill in the art at the time of this invention to add Notaro's protective circuit to Wong's charger in order to protect both the battery and the charging circuitry.

As to Claim 20, which is dependent upon claim 17, Wong in view of Notaro disclose wherein the linking links the external voltage as a component of a data transfer link (Column 3, lines 61-67) (USB is a data transfer link).

As to claim 21, which is dependent upon claim 17, Wong in view of Notaro disclose wherein the linking links the external voltage as a component of a Universal Serial Bus (Column 3, lines 61-67).

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3. Claims 3-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Notaro as applied to claim 2 and 6 above, and further in view of Mojaradi et al. (US 5,357,393).

As to claim 3, which is dependent upon claim 2, Wong in view of Notaro disclose all the limitations of claim 2. Wong in view of Notaro disclose the apparatus in which its gate is to be biased by the switching circuit when in the overvoltage protection mode of operation, to ensure that the node-to-node potential on the circuit components does not exceed the specified value (Column 4 lines 10-27). Wong in view of Notaro do not expressly disclose wherein the protection circuit uses a floating well transistor.

Mojaradi teaches that using a flowing well transistor can protect the circuit from far greater voltages that a conventional setup can (Column 3 lines 3-25). It would have been obvious to a person having ordinary skill in the art at the time of this invention to incorporate Mojaradi's High voltage protection circuit design into Wong in view of Notaro's apparatus in order to provide higher voltage protection for the battery and charger by the use of the floating well design of Mojaradi.

As to claim 4, which is dependent upon claim 2, Wong in view of Notaro expressly disclose where in which its gate is to be biased by the switching circuit when in the backflow current protection mode of operation, to turn off the transistor to eliminate a current path from the battery to the external power source (Notaro, Column 3, lines 51-57). Wong in view of Notaro do not expressly disclose wherein the protection circuit

uses a floating well transistor. Mojaradi discloses the use of a floating well transistor can protect the circuit from far greater voltages that a conventional setup can (Figure 2). It would have been obvious at the time of this invention to a person having ordinary skill in the art to modify Wong in view of Notaro's protective circuit with Mojaradi's designs, so that Notaro's transistor will still be turned off when there is a backflow current, but with Mojaradi's design, the transistor, which is now has a floating well, is protected from much greater voltage values.

As to claim 5, which is dependent upon claim 3, Wong in view of Notaro in further view of Mojaradi disclose wherein the switching circuit receives input voltage from the external power source (Notaro figure 1, elements 160 and 165) to be switched to establish the bias voltage to the floating well transistor (Mojaradi Figure 2) during the overvoltage protection mode of operation.

As to claim 7, which is dependent upon claim 6, Wong in view of Notaro disclose all the limitations of claim 2. Wong in view of Notaro disclose the apparatus in which its gate is to be biased by the switching circuit when in the overvoltage protection mode of operation, to ensure that the node-to-node potential on the circuit components does not exceed the specified value (Column 4 lines 10-27). Wong in view of Notaro do not expressly disclose wherein the protection circuit uses a floating well transistor. Mojaradi teaches that using a floating well transistor can protect the circuit from far greater voltages that a conventional setup can (Column 3 lines 3-25). It would have

been obvious to a person having ordinary skill in the art at the time of this invention to incorporate Mojaradi's High voltage protection circuit design into Wong in view of Notaro's apparatus in order to provide higher voltage protection for the battery and charger by the use of the floating well design of Mojaradi.

Allowable Subject Matter

4. Claims 8, 9, 18, and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: Claim 8 and 9 recite, inter alia, the protection circuit uses the floating well transistor to protect against backflow current. The floating well transistor of claim 8, is the same floating well transistor of claim 7, therefore this floating well transistor protects the circuit from both overvoltage and backflow current. The art of record does not disclose the invention nor does it provide teachings nor would it be obvious to combine transistors to create this device.

Claims 18 and 19 recite, inter alia, a first and second biasing applied to a transistor having a floating well, wherein the first biasing of the transistor controls the overvoltage protection, and the second biasing of the transistor prevents backflow of current. The art of record does not disclose the invention nor does it provide teachings nor would it be obvious to use a single transistor to provide both overvoltage protection and backflow current protection.


6. Claims 10-16 are allowed.
7. The following is a statement of reasons for the indication of allowable subject matter: Claims 10-16 recite, inter alia, a protection circuit for use with a battery to provide overvoltage and backflow current protection, where a first transistor operates as a current source, and a second transistor, disposed between the first transistor and the battery, uses a floating well to provide both overvoltage protection and backflow current protection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Grant whose telephone number is 571-272-2727. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 571-272-2084. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RG

 3/31/05

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